

INSTRUCTIONS TO BIDDERS

PERIOD: This agreement period is for one (1) year from the date of the purchase order, with the option to renew on a year-by-year basis for a maximum of four (4) years thereafter.

ESTIMATED QUANTITIES: By responding to this bid, vendors agree to furnish quantities above or below the estimated quantity provided according to the needs of the City. The quantity provided has not been inflated for bid purposes and is based on expected implementation in the first year. It is estimated that the quantities as shown in these specifications will be purchased and that an equal amount of bronze meters traded-in. The City reserves the right to increase or decrease all quantities listed according to their needs.

ESTIMATED QUANTITIES PURCHASED FOR THE FIRST YEAR: The City estimates the annual usage for ¾-inch through 2-inch water meters to be as follows:

¾-inch meters	2,400
1-inch meters	250
1 ½-inch	100
2-inch	150
Retrofit register/radio for Neptune	5,500
Retrofit register/radio for non-Neptune	100
Total	8,500

PRICES: It shall be understood that the prices bid are firm for the initial one (1) year of the agreement. Pricing for any extended periods, if any are offered, will be based on the Producers Price Index (PPI) for the prior twelve (12) month period. Adjustments in pricing may be justified by documentation supporting the increase, such as proof of increases in material costs, etc.

ABSOLUTELY NO PRICE ADJUSTMENTS WILL BE ALLOWED DURING THE INITIAL ONE YEAR AGREEMENT PERIOD.

DELIVERY: All deliveries shall be F.O.B. delivered prices on an as needed, as called for basis and must be made to the place and time indicated on the purchase order or as mutually agreed upon.

Each bidder shall furnish, with their bid, a complete detailed description of the meter, register, radio, system infrastructure, and software they propose to furnish including descriptive literature, accuracy and head loss and dimensional chart.

WARRANTY: The warranty furnished shall be that warranty currently published and normally given for water meters and AMI components furnished by the manufacturer(s). A complete description of the warranty to be furnished shall be provided with each bid for evaluation. Any meter and AMI components maintenance plans provided by the

bidder should also be submitted and described. Evaluation of warranty and maintenance plans shall be considered in the award of the agreement.

EVALUATION/ACCEPTANCE OF BID AND AWARD: Bids are subject to evaluation and acceptance by the City. There is no guarantee that the City will award a purchase order to the successful bidder. This bid, if awarded, will be based on the lowest responsive, responsible bidder(s) whose bid(s) complies with all the specifications attached. Evaluation of the length of warranty shall be part of such consideration. The lowest responsive, responsible bidder shall be reviewed for financial strength, references and their ability to provide the quantity of meters requested in this bid.

RENEWAL OF AGREEMENT: The City may desire the option of extending this agreement on a year-by-year basis for a maximum of two (4) years after the initial one (1) year. If such option is exercised, the terms and conditions quoted herein are to remain firm for the extended period of the agreement, if any is offered.

AGREEMENT OR EXCEPTION TO THIS MUST BE CLEARLY SPECIFIED ON THE BIDDER'S PROPOSAL SHEET.

MANUFACTURER'S REPRESENTATIVE: Successful bidder must be an authorized distributor of the manufacturer of the water meters and AMI system proposed and have a local representative within the Southern California area. The City desires to have a single manufacturer's representative bid on this project to ensure a single point-of-contact for the project.

Manufacturer's representative shall have a minimum of five years of field and production experience with all sizes and models quoted. Manufacturer's representative shall provide only one model of meter and AMI system that complies with these specifications. Suppliers must have been manufacturing meters for at least 80 years and the AMI system and components for at least 7 years.

Failure to submit any of the above information, processes or services with your bid shall be cause for the rejection of bid.

TECHNICAL SPECIFICATIONS

METERS

All meters furnished shall conform to or exceed the "Standard specifications for Cold Water Meters" C-700, or latest revision issued by AWWA and must meet NSF-61 Standards for lead free materials. Meters to be utilized in a potable, cold water application, in a pit setting. Meters offered for consideration should be cataloged and carry an extensive, reviewable background of performance, from other utilities, in a pit setting. The Successful bidder will be required to provide an affidavit stating that the meters furnished comply with the requirements of both AWWA C-700 and NSF-61 Standards. All meters are to be guaranteed for a minimum of one year on materials and

workmanship. Meters shall be magnetically driven with no mechanical device used to transfer the movement of the disc to the register.

Meters shall operate up to a working pressure of 150 psi, and an operating temperature up to 100-degrees F, without leakage or damage to any parts. The meter accuracy and/or flow registration shall not be affected when operating at this pressure, and/or temperature, due to possible distortion.

Meters must be magnetic drive, positive displacement meters of the flat nutating disc type. Oscillating piston types will not be accepted.

The meter size, capacity and lengths are to be supplied as specified in AWWA Standard C-700 or the latest revision. Meters shall also conform to current AWWA C-700, latest revision, for test flows, head loss and accuracy standards.

All meter main cases are to be made of a no-lead high copper alloy containing a minimum of 85% copper that meets the ANSI/NSF 61 standard. Main case markings shall be cast raised and indicate size, model and direction of flow. Plastic, or epoxy coated, main cases will not be accepted.

Bottom plates and/or upper top plates will be made of lead free materials as specified above for the main case.

The 1 ½" and 2" displacement meters are to have oval, 2-hole flanges.

All lead free brass main cases shall be guaranteed free from manufacturing defects in workmanship and material for the life of the meter.

All main case bolts are to be made of brass to prevent corrosion.

Each meter must be accompanied by a factory test tag certifying the accuracy at the flows required by AWWA C-700. Normal operating range shall be warranted per AWWA C-700 Section 4.2 Table 1 as follows:

Size	Accuracy Range (+/- 1.5%)
¾"	¾ - 30 gpm
1"	1 - 50 gpm
1 ½"	2 - 100 gpm
2"	2 ½ - 160 gpm

The measuring chamber shall not be cast as part of the main case and must be easily removable. The measuring chamber, and its components, must be made of non-corrosive material. All meters must be provided with a corrosion resistant strainer, which is easily removable from the meter.

Meters and meter parts shall be manufactured, assembled, and tested within the United States. Manufacturers may be required to provide proof of where and of what percentage of the meter, register, chamber, and maincase is manufactured in the United States.

Manufacturers shall have a minimum of seven years of field and production experience with all sizes and models quoted. Manufacturers shall provide only one model of meter which complies with these specifications. Suppliers must have been manufacturing meters for at least 80 years.

All meters shall be guaranteed upgradeable to the Neptune E-Coder System without interruption of the customer's service.

REGISTERS

These register specifications cover a self-contained solid state absolute encoder register metering system designed to obtain remote simultaneous water meter registration that is guaranteed to exactly match the registration on the register odometer. The metering information shall be obtained through a Meter Transmission Unit (MTU) using a compatible data capture system. The MTU device must be hard-potted to the register and splicing will not be allowed.

The system shall be configured as follows: Solid-state absolute encoder meter register — Direct mounting, electromagnetically encoded measuring element into an electronic solid-state odometer. Encoder shall provide value-added flow data including leak, tamper and back flow detection when connected to a compatible RF AMI MTU. Batteries and digital counters using volatile memory are not allowed. Encoder register shall display flow rate information at the register.

The Registration of the register shall be as follows:

- The register shall provide at least a nine-digit visual registration at the meter.
- The unit shall provide an 8-digit meter reading for transmission through the radio MTU.
- The dial shall have a high resolution nine-digit LCD display for meter testing.
- The register shall employ a visual LCD leak detection indicator as well as provide remote leak detection through an ASCII format to the RF AMI MTU.
- Internal batteries shall not be allowed.
- The manufacturer will guarantee that the reading obtained electronically matches the LCD odometer reading on the register and that the manufacturer will pay the difference at the current rate whenever a discrepancy appears.
- The register should accumulate and register consumption without connecting to a MTU.
- The register shall display flow rate information.

The registers should be manufactured as follows:

- The unit must be constructed in a roll-sealed copper shell and glass lens assembly.

- The register shall be attached to the meter case by a bayonet attachment. Fastening screws or nuts shall not be required. A tamper-proof seal pin shall be used to secure the register to the maincase.
- The register shall be removable from the meter without disassembling the meter body and shall permit field installation and/or removal without taking the meter out of service.
- Provision shall be made in the register for the use of seal wires to further secure the register.
- Terminal connections must be permanently potted so that the terminal cover cannot be removed.
- The solid-state absolute encoder register shall incorporate an Application Specific Integrated Circuit (ASIC) and firmware designed to verify accurate measurement, information transmission and data integrity.
- The solid-state absolute encoder register shall provide additional value-added information remotely when connected to a radio MTU (i.e. detailed leak detection data, days of leak state, days of no consumption, and back flow indication). This information shall be communicated through the encoder protocol and RF MTU to the route management software to allow the seamless integration of data into a CIS package.
- Supplier must have been manufacturing register quoted for a minimum of 5 years.

All registers are to have the size, model and date of manufacture stamped on the dial face. All registers are to read in cubic feet only. Registers to have at least a 10-year guarantee.

AMI SYSTEM

It is the intent of the enclosed specifications to provide the City of Huntington Beach with a Fixed Network Advanced Metering Infrastructure (AMI) System. The City has been piloting the Aclara RF System for 3 years with great success. The AMI system shall be the Aclara Star Network system.

The City will not consider any drive-by systems or MTU telephone-based AMI systems, nor the installation of technology that has not been field tested and available on the market for less than seven (7) years.

In the first year of AMI implementation, 10 (ten) data collectors are required to provide adequate coverage for the geographic area selected. The AMI system shall consist of a series of data collector units (DCU) located strategically throughout the City's territory. The DCU units will be powered using either solar, long duration batteries, with a full-guarantee of five (5) or more years, or direct electrical connection to retrieve meter readings and relay them to a centralized location at City offices. The DCU units, as well as the corresponding MTU units, must operate on a licensed frequency that is the exclusive property of the City.

The system must utilize an identification capability for each MTU/DCU and deliver the meter read data back to the City's facilities at pre-designated times or continuously, but

not less than once in a 24-hour period.

All retrieved meter readings will be in a format compatible with the vendor supplied software for the fixed network system. The software will prepare and format the meter reading data for the printing of selected management reports and the transfer of the meter reading data to the billing software for customer invoicing. The Fixed-Network AMI System shall provide, at minimum, the following:

1. Provide for automatic, routine operation of the AMI System, including diagnostic procedures on all hardware, logging of all alerts, alarms and exceptions, and recording operating statistics.
2. Provide the City operator inquiries into the AMI system database to view specific accounts.
3. Process the readings and add them to the City database.
4. Receive the readings as collected from the DCU(s).
5. The AMI System software shall be capable of providing individual account reports, flagging large usage, system status, history listing specific accounts, reserve battery strength, profiling, and tamper alarms.
6. Enable leak detection.
7. Collection of water data on an hourly basis or more frequently
8. Enable provision of enhanced products and services to customers, such as customizable billing and Internet-based information access
9. Enable customer choice and retail access programs
10. Provide for tamper flag/alarm indications

AMI COMPONENTS

Meter Transmission Units (MTU)

The MTU will be housed in a molded plastic housing, hermetically sealed and resistant to rain, moisture and temperature changes from -40 to +140 degrees Fahrenheit. The enclosure must house the complete unit, which includes electronics, battery compartment, and wire connections. The unit will also have an internal antenna.

Battery Life: The water MTU shall have a permanently installed non-field replaceable battery with a twenty (20) year life cycle expectancy. Batteries shall NOT require any special disposal and/or handling provisions.

Maintenance: MTU shall be maintenance free. After initial installation, MTU will continue to operate at optimal levels for the entire life of the product without the need of any subsequent visits by utility personnel to reprogram or tune the MTU.

Read Frequency: The MTU shall contain a powerful radio that transmits a brief message containing the MTU identification number and port number, the meter reading, and tamper flags at programmed intervals. The MTU shall provide readings at least once (1) a day to as frequently as every five (5) minutes to meet high interval reading requirements.

The initial and subsequent programming of the MTU shall either be accomplished at the meter or remotely.

Diagnostic Information: MTU shall provide diagnostic information, such as battery voltage, tamper flags, and line power presence with every transmitted reading.

Installation: MTUs shall allow for ease of installment and provide appropriate provisions to avoid installer mistakes in installation, connection to meters, and programming. The MTU shall be configured with a Field Programmer that will take the operator through a series of simple steps. Each step shall include error checking and verification, where appropriate. The Field Programmer shall communicate with the MTU to confirm that it is properly configured and wired. MTUs shall announce themselves onto the network when they are installed and turned on. The Network shall immediately begin receiving data from the MTU devices.

FCC Regulation: All equipment must comply with current Federal Communications Commission (FCC) requirements, which include proper labeling of any system components. The vendor must have supporting documentation available upon request to verify compliance. The system proposed by the vendor must operate on a dedicated, licensed frequency to prevent erroneous reading errors. The Vendor must obtain said license on behalf of City.

Labeling: The MTU shall be permanently labeled with the Manufacturer's name, ID number, date of manufacture, a tamper warning, and required FCC labeling.

Data Collector Units (DCUs)

The fixed network shall consist of a series of Data Collector Units (DCU) located strategically throughout the City. DCUs operate in temperature extreme ranges of -30° to 85° C.

Power Supply: The DCU units will be powered using either AC power or long duration batteries with a solar panel trickle charge, with a full-guarantee of 5 or more years, to retrieve meter readings and relay them to a centralized location at City offices.

Memory Capacity: Must have non-volatile data retention from 275,000 to 600,000 records, depending on the type of message coming in from the MTU and shall not be married to any particular MTU.

Diagnostic Information: The DCU will measure and record battery strength, RF signal strength and time and date stamp each inbound transmission. These records will be transmitted with each NCC data transfer.

Transmission Security: Data transmission between the MTU and the DCU shall be in a proprietary format and not easily deciphered by outside sources.

DCU Planned Network: The locations shall be determined by the vendor as part of the

bid. 100% coverage shall be provided for the service territory.

Mounting: DCUs shall be capable of being mounted on roofs, utility poles, towers, etc., to collect readings from all meters in the coverage area

DCU Network Redundancy: Redundancy will be incorporated into the DCU placement process to accelerate the reading process and ensure all meters provide a reading. Each DCU will be able to read at least one (1) square mile of coverage and support not less than twenty five thousand (25,000) MTU units. All DCU electronics shall be electrically isolated and protected against static discharge and indirect lightning strikes. DCU units may be added to the system at any time without need for system reconfiguration.

Installation: DCUs shall be automatically recognized and installed onto the System network. DCU behaviors shall be programmable, including connection time, alarm message handling, alternative connection numbers, etc.

Scalability: DCU units may be added to the system at any time without need for system reconfiguration.

Electrical Isolation: All DCU electronics shall be electrically isolated and protected against static discharge and indirect lightning strikes.

Maintenance: After being installed, DCUs shall require little to no maintenance for the life of the unit.

Network Control Computer (NCC) and Software:

The Fixed-Network AMI System will be operated from a dedicated control computer, which shall be a PC or server utilizing the most current MS Windows Operating System.

Software must be provided to perform the following functions: (1) operate the control computer that interfaces with AMI system components to obtain meter readings, (2) manage the database of meter readings and other related information about the meters and the AMI system, (3) interface with City's Customer Information System (CIS) and other information systems. If the applications identified above are distinct and separate, Supplier shall respond to this subsection for each application.

At a minimum, the AMI software will provide the following pieces of data:

- 1) Customer account number.
- 2) Customer address.
- 3) Meter serial number.
- 4) Date of system integration.
- 5) System meter read history.
- 6) MTU I.D. number.

In addition to the required data noted above, as held within the meter reading software

itself, the AMI vendor must supply an interface with the City's billing system. The City will provide an input/output file format to the successful vendor. License for said software will be issued to the City upon delivery of AMI server.

Any Supplier-supplied database used to store and manage meter readings should be non-proprietary, ODBC-compliant, SQL-compliant, or provided by a standard commercial database supplier.

The AMI system supplier shall provide the appropriate software to automatically transfer appropriate data to the billing and Customer Information System (CIS) in a standard, nonproprietary format (e.g., fixed field ASCII) compatible with City's existing formats. Each record provided to the CIS shall contain at a minimum: account number, MTU ID number, route number, meter ID number, meter readings, date and time for each meter reading, and tamper indications.

The system shall contain tamper detection capability of the meter, MTU or wiring in between and provide an immediate transfer to the NCC to allow for proper notification and reporting. System must allow for triggering of e-mail, pager, or electronic message notification to subscribed users. Mandatory tamper detection shall include the following:

- 1.) Leak Detection
- 2.) Abnormal consumption
- 3.) Unauthorized usage
- 4.) Missing/stolen meter

The system shall monitor water consumption through the meter and specifically indicate when there is an abnormal increase in water consumption or when there is a suspected leak. The software must also provide meter reading management reports, usage analysis reports (flow profiling, leak detection, tamper detection and backflow conditions), on-demand/off-cycle reads and system management diagnostics. The solution shall provide leak detection data that is detected within the memory of the register itself.

The system (either through reports or alarms from the MTU) should indicate when there is an extended period of no flow or a minimum flow through the meter. The system shall also facilitate identifying a full monthly billing period when usage is significantly below prior customer consumption.

The system should indicate when consumption is abnormally high during any billing period, suggesting a continuous flow condition. Please indicate how the abnormal high flow condition is measured.

The System shall support significant security measures. Any degree of security shall be implemented based on user identification, user location, or mixtures. Data shall be protected at all levels and during all steps and transmissions to the database. Additionally, the ability to modify, i.e. add, edit, and delete, data shall be determined by user profiles established by City, with permissions granted according to the job requirements of the user.

The system should provide a method to track and monitor all changes to software, hardware, work processes and equipment.

The System software package shall operate as an intranet server to provide meter readings to client workstations throughout the City's office network.

System shall allow for archiving of all necessary data and easy retrieval of those records at any time.

System shall have back-up capabilities and procedures to ensure that system and consumption data is not corrupted or lost.

System diagnostics shall be collected at all levels and transferred on to the NCC where several types of diagnostic reports shall be produced. Such reports shall indicate problems ranging from battery voltage, to subsystem failures, to failure to recognize a proper communication with the meter.